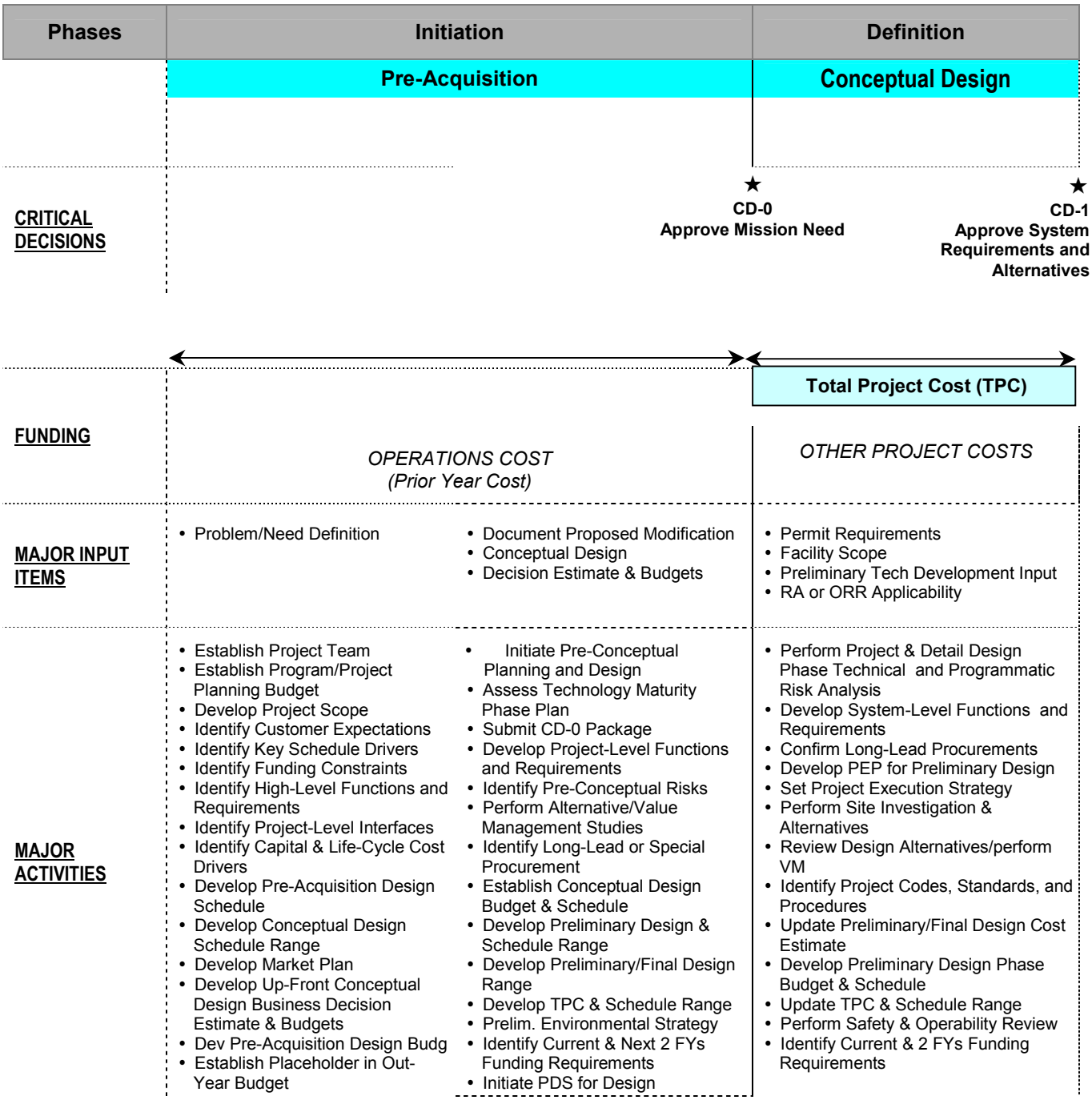
Appendix C

Project Life Cycles

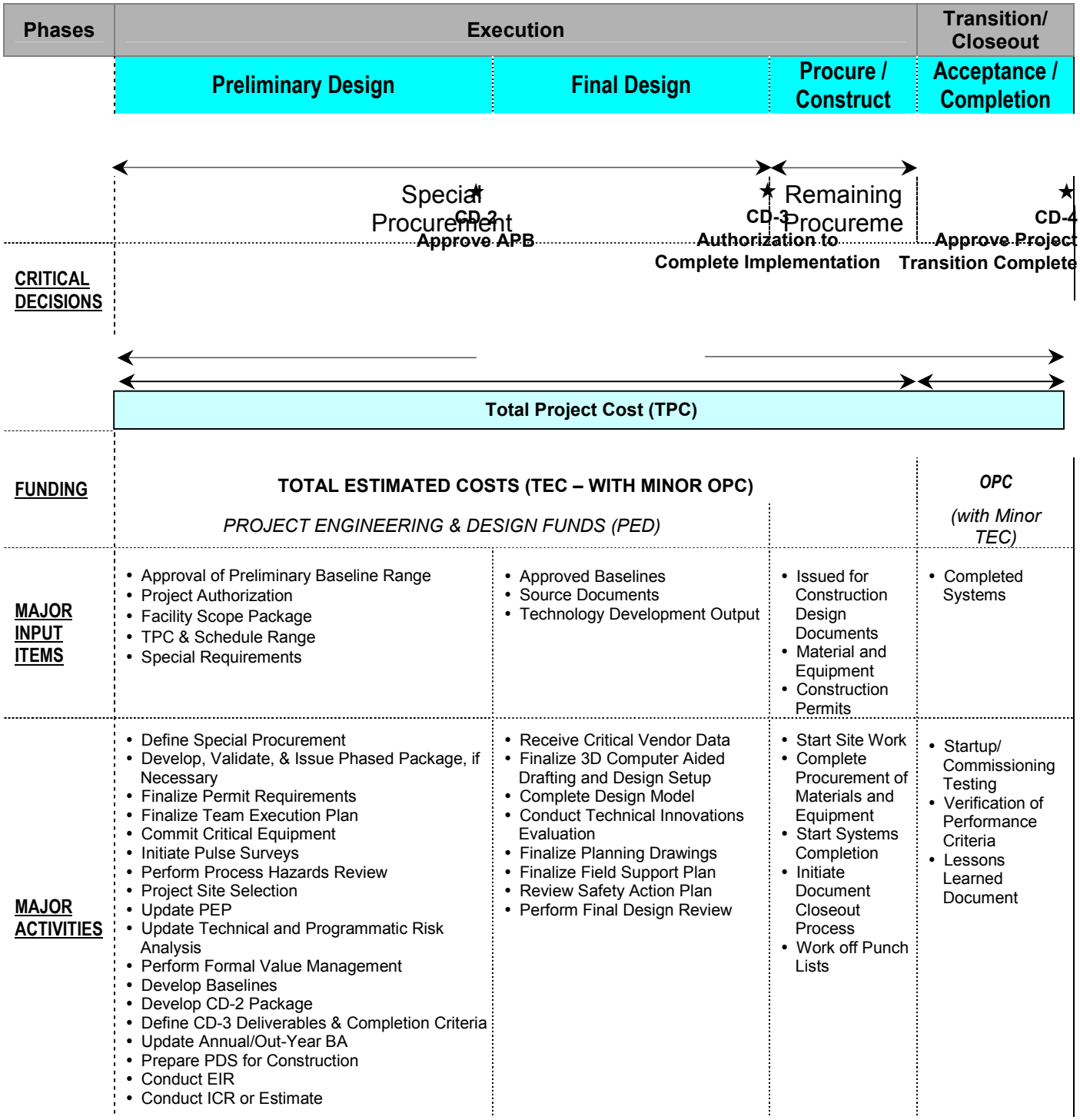
Project Phases

Simplified models associated with the four most common project types: system projects, ER projects, disposition, and IT are graphically represented in the following tables. They are provided as a broad guide to assist program and project organizations to quickly see and understand the specific project timeline, by type, and includes how the phases, critical decisions, major input/milestones, and deliverables link together. Typical inputs and outputs/deliverables, decision points, and documents are listed for project management and IPT use. These examples reflect considerable past experience and have been updated consistent with the ongoing evolution of both DOE and Federal acquisition management guidelines.


Phases
Initiation
Definition
Pre-Acquisition
Conceptual Design
CRITICAL DECISIONS
CD-0
Approve Mission Need
CD-1
Approve System Requirements and Alternatives
FUNDING
Total Project Cost (TPC)
OPERATIONS COST
(Prior Year Cost)
OTHER PROJECT COSTS
MAJOR INPUT ITEMS
• Problem/Need Definition
• Document Proposed Modification
• Conceptual Design
• Decision Estimate & Budgets
• Permit Requirements
• Facility Scope
• Preliminary Tech Development Input
• RA or ORR Applicability
MAJOR ACTIVITIES
• Establish Project Team
• Establish Program/Project Planning Budget
• Develop Project Scope
• Identify Customer Expectations
• Identify Key Schedule Drivers
• Identify Funding Constraints
• Identify High-Level Functions and Requirements
• Identify Project-Level Interfaces
• Identify Capital & Life-Cycle Cost Drivers
• Develop Pre-Acquisition Design Schedule
• Develop Conceptual Design Schedule Range
• Develop Market Plan
• Develop Up-Front Conceptual Design Business Decision Estimate & Budgets
• Dev Pre-Acquisition Design Budg
• Establish Placeholder in Out-Year Budget
• Initiate Pre-Conceptual Planning and Design
• Assess Technology Maturity Phase Plan
• Submit CD-0 Package
• Develop Project-Level Functions and Requirements
• Identify Pre-Conceptual Risks
• Perform Alternative/Value Management Studies
• Identify Long-Lead or Special Procurement
• Establish Conceptual Design Budget & Schedule
• Develop Preliminary Design & Schedule Range
• Develop Preliminary/Final Design Range
• Develop TPC & Schedule Range
• Prelim. Environmental Strategy
• Identify Current & Next 2 FYs Funding Requirements
• Initiate PDS for Design
• Perform Project & Detail Design Phase Technical and Programmatic Risk Analysis
• Develop System-Level Functions and Requirements
• Confirm Long-Lead Procurements
• Develop PEP for Preliminary Design
• Set Project Execution Strategy
• Perform Site Investigation & Alternatives
• Review Design Alternatives/perform VM
• Identify Project Codes, Standards, and Procedures
• Update Preliminary/Final Design Cost Estimate
• Develop Preliminary Design Phase Budget & Schedule
• Update TPC & Schedule Range
• Perform Safety & Operability Review
• Identify Current & 2 FYs Funding Requirements

MAJOR DELIVERABLES Note: Deliverables from each phase are input to subsequent phases	• **OUTPUTS:** - Market Plan - Conceptual Design Business Decision Estimate & Budgets - High-Level Functions & Requirements - Pre-Conceptual Design Budget - Pre-Conceptual Design Schedule - Conceptual Design Schedule Range	• AS in the PASD • Statement of Mission Need • Minimum Technical and Functional Requirements • PDS for Design with Special Procurement Disclosure • Tech Task Request • Technology Development Issues • Program Plan • Preliminary/Final Design & Prelim Schedule Range • TPC & Schedule Range • Mission Need Independent Project Review • Conceptual Design Budget & Schedule	• Acquisition Strategy • Project Expectations Summary • SOW for Design • CA/EIS/ROD • Systems Engineering Mgmt Plan • Conceptual Design Package • Preliminary PEP • Preliminary Hazard Analysis Report • Preliminary Team Execution Plan • RMP • Preliminary Design Phase Budget and Schedule • Verification of Mission Need • CD-1 Package • Updated TPC & Schedule Range • Formal Value Management Plan

Project Overview for System Projects (Initiation - Definition Phases)


Phases
Execution
Transition/ Closeout
Preliminary Design
Final Design
Procure / Construct
Acceptance / Completion
Special Procurement
Remaining Procureme
CD-2
Approve APB
CD-3
Authorization to Complete Implementation
CD-4
Approve Project Transition Complete
CRITICAL DECISIONS
Total Project Cost (TPC)
FUNDING
TOTAL ESTIMATED COSTS (TEC – WITH MINOR OPC)
PROJECT ENGINEERING & DESIGN FUNDS (PED)
OPC
(with Minor TEC)
MAJOR INPUT ITEMS
• Approval of Preliminary Baseline Range
• Project Authorization
• Facility Scope Package
• TPC & Schedule Range
• Special Requirements
• Approved Baselines
• Source Documents
• Technology Development Output
• Issued for Construction Design Documents
• Material and Equipment
• Construction Permits
• Completed Systems
MAJOR ACTIVITIES
• Define Special Procurement
• Develop, Validate, & Issue Phased Package, if Necessary
• Finalize Permit Requirements
• Finalize Team Execution Plan
• Commit Critical Equipment
• Initiate Pulse Surveys
• Perform Process Hazards Review
• Project Site Selection
• Update PEP
• Update Technical and Programmatic Risk Analysis
• Perform Formal Value Management
• Develop Baselines
• Develop CD-2 Package
• Define CD-3 Deliverables & Completion Criteria
• Update Annual/Out-Year BA
• Prepare PDS for Construction
• Conduct EIR
• Conduct ICR or Estimate
• Receive Critical Vendor Data
• Finalize 3D Computer Aided Drafting and Design Setup
• Complete Design Model
• Conduct Technical Innovations Evaluation
• Finalize Planning Drawings
• Finalize Field Support Plan
• Review Safety Action Plan
• Perform Final Design Review
• Start Site Work
• Complete Procurement of Materials and Equipment
• Start Systems Completion
• Initiate Document Closeout Process
• Work off Punch Lists
• Startup/ Commissioning Testing
• Verification of Performance Criteria
• Lessons Learned Document

MAJOR DELIVERABLES Note: Deliverables from each phase are input to subsequent phases	• Review of Contractor Project Mgmt System • Preliminary Design Detailed Schedules • Issued for Design Source Documents • Assignment of Responsibilities Matrix • Performance Metrics • Staffing Plans • Tech Risk Analysis Report • Technology Development Output • Prelim Safety Analysis Report • Final PEP • CD-2 Package • TPC Estimate • EVMS certify • ICR • NEPA Documentation • PDS for Construction • Performance Baseline Independent Review	• Equipment and Material Requisitions • Issue for Construction Design Documents • 100% Definitive Estimate • Integrated Project Schedule and Sub-tier Schedules • Updated PEP & Performance Baseline • Final Design & Procurement Pkgs • Verification of Mission Need Budget & Congressional Authorization • Approved Safety Documentation • Execution Readiness Independent Review • Updated Construction PDS	• Turnover & Startup Plan • Operating and Maintenance Manuals • Construction Completion • Startup Commissioning Test Plan • Final Safety Analysis Report • Annual Updated Construction PDS	• ORR & Acceptance Report • Approval for Acceptance • As-Built Drawings • Final Safety Report • Project Completion Report

Project Overview for System Projects (Execution – Transition/Closeout Phases)

Phases	Initiation		Definition
	Site Evaluation	RI/FS or RFI/CMS	SB/PP & ROD
CRITICAL DECISIONS		★ **CD-0 Approve Mission Need Statement**	★ **CD-1 Approve System Requirements and Alternatives**
FUNDING	**Operations Funded**		
MAJOR INPUT ITEMS	- Historical Records - Site Visit - Interviews - HASP	- PA/SI Report * RFA Report - Updated HASP	- Constituents of Concern, - Remedial Action Objectives - Remedial Goal Options (or equivalents) + RI/BRA Summary Report + FS Report * CMS Report * RCRA Part B Permit
MAJOR ACTIVITIES AND DELIVERABLES	+ Preliminary Assessment/ Site Investigation (PA/SI) Report * RCRA Facility Assessment (RFA) report * RCRA Part A Permit + Land Use Control Assurance Plan	- Establish Project Team - Identify Key Schedule Drivers - Identify Funding Constraints - Identify Project-Level Interfaces - Identify Project Risks - Prepare Life Cycle Cost Estimate - Scope - Schedule - Cost - Prepare Work Plan - Characterization - Identify: - Constituents of Concern, - Remedial Action Objectives, - Remedial Goal Options (or equivalent) - Conceptual Site Models - Fate and Transport Model + RI/BRA Summary Report + Prepare FS Report * Prepare CMS Report * RCRA Part B Permit - Treatability Studies/Reports	- Prepare PEP - Prelim. Engineering Deliverables - Hazard Classification - Performance Reqs. - Performance Assessment - Safety Documentation - Emergency Preparedness - Safeguards & Security Reqs - Waste Management Plan + Land Use Control Implementation Plan + Prepare Proposed Plan * Prepare Statement of Basis + Prepare ROD * Closure Plan * Corrective Action Plan - Prepare RMP - Update Life Cycle Cost Estimate - Perform EM-PDRI - IPR - Prepare CD- 0/1 Package - Value Management Plan

Project Overview for Environmental Restoration Projects

Notes:

- Items are applicable to CERCLA and RCRA.

+ Items are applicable to CERCLA only.

* Items are applicable to RCRA only.

RI/FS = Remedial Investigation/Feasibility Study

RFI = RCRA Feasibility Investigation

CMS = Corrective Measures Study

Phases	Execution		Transition /Closeout
	Engineering	Construction/ Remediation	Acceptance/Completion
CRITICAL DECISIONS	★ CD-2/3 Approve APB and Start Remediation Action		★ CD-4 Approve Project Transition Complete
FUNDING	Total Project Cost (TPC) (Operations Funded)		TPC (Operations Funded)
MAJOR INPUT ITEMS	+ RI/BRA Summary Report + Feasibility Study * Corrective Measures Study + Proposed Plan * Statement of Basis * Closure Plan * Corrective Action Plan	- Permits - Design Documents - Updated HASP - Waste Management Plan	- Operations/Maintenance Manuals & Procedures - Final As-builts
MAJOR ACTIVITIES AND DELIVERABLES	- Update PEP - Update Models as applicable - Final Design Deliverables - Hazard Analysis - Performance Assessment - Safety Documentation - Emergency Preparedness - Safeguards and Security Req's - Waste Management Plan - Pollution Prevention Plan - Stormwater Management Plan - Other Permits as required - Design Specs and Drawings - Procurement Packages + Post ROD Documentation ** + Remedial Design Work plan + Remedial Design Report + Remedial Action Work Plan - Environmental Monitoring Plan - Update RMP - Update Life Cycle Cost Estimate - Perform EM-PDRI - External Independent Review - Prepare CD- 2/3 Package - Construction Readiness Review - VM Review/Recommendations	- Subcontract Award - Remedial Action Construction - Final As-builts - Operations/ Maintenance Manuals & Procedures	+ Final Remediation Report (if applicable) - Complete CD-4 Package - Readiness Review, if required - Turned Over Systems or Closed Site + Post Construction Report - Turnover and Startup Plan * Closure Certification - Effectiveness Monitoring Plan

Notes:

- Items are applicable to CERCLA and RCRA.

+ Items are applicable to CERCLA only.

* Items are applicable to RCRA only.

**Some sites have been combined these into one—the "Remedial Action Implementation Plan."

RI/FS = Remedial Investigation/Feasibility Study

RFI = RCRA Feasibility Investigation

Project Overview for Environmental Restoration Projects (Execution – Transition/Closeout)

Phase	*Initiation*	*Definition*
	Pre-conceptual Planning	**Conceptual Design**
CRITICAL DECISIONS	★ **CD-0** **Approve Mission Need**	★ **CD-1/2** **Approve Acquisition Performance Baseline** **(Detailed Work Plan)**
	Program Funding	**D&D Project Funding**
MAJOR INPUT ITEMS	• Historical Records and Drawings • GSA approval to decommission	• Decision to proceed with decommissioning • Interviews • HASP and RadCon Programs • Develop Site programs and agreements on cleanup levels • Key schedule drivers • Key funding constraints • Preliminary Scope / Schedule
MAJOR ACTIVITIES	• Continue Surveillance & Maintenance • Identify Project Risks • Prep Life Cycle Cost Estimate • Preliminary Scope • Preliminary Schedule • Preliminary Cost	• Prepare Engineering Evaluation / Cost Assessment (EE/CA) • Evaluate available process knowledge / historical data • Conduct Preliminary Hazard Classification • Conduct & Document Final Hazard Classification • Perform Plant Forces Work Review and plan for appropriate implementation of project • Prepare DQO & Sampling / Analysis Plan • Public Review & Comment on EE/CA • Prepare Removal Action Work Plan which includes the waste management plan and air monitoring plan • Develop QA Project Plans • Prepare Field Implementation Guide (if needed) • Obtain regulator approvals for EE/CA, Removal Action Work Plan and SAP • Develop / Update Project Scope / Cost / Schedule for DWP based on RAWP / Action Memo • Prepare End Point Criteria • Prepare Emergency Plans (as needed) • Waste Characterization Sampling • Perform Waste Designation and Planning • Perform Value Management Planning
MAJOR DELIVERABLES	• HASP and RadCon Programs • Decision if Time Critical or Emergency Action is needed • Identify key schedule drivers • Identify key funding constraints • Develop Site programs and agreements on cleanup levels • Prepare CD-0/1 Package	• Action Memorandum • Removal Action Work Plan / Waste Mgmt Plan • Sampling & Analysis Plan • Independent Verification determination by DOE • Final Hazard Classification and Authorization Basis Document • Document project Scope / Cost / Schedule in the Detailed Work Plan • Prepare CD-2/3 Package

Note 1: The process outlined here is for facilities included within a site where the decision has already been made to perform decommissioning under CERCLA.

Project Overview for Disposition Projects (Initiation – Definition)

Phase	*Execution*			**Transition/Closeout**
	Preliminary Design	**Final Design**	**Construction**	**Final Characterization and Completion**
CRITICAL DECISIONS	★ **CD-3** **Approve Start of Execution of Disposition or Remedial Action**			★ **CD-4** **Approve Project Transition Complete**
	D&D Project Funding			**Long Term S&M Program Funding**
MAJOR INPUT ITEMS	• Action Memorandum • Removal Action Work Plan • Sampling & Analysis Plan (SAP) • Independent Verification determination by DOE • Final Hazard Classification Document and Authorization Basis Document • Document Project Scope / Cost / Schedule in the Detailed Work Plan • Waste Designation and Plans			• Closeout Verification Package approved by regulators • Documentation of any remaining underground waste sites • S&M Plan and Final Hazard Classification / Authorization Basis Document for the Long Term S&M phase • Approved End Point Criteria Package
MAJOR ACTIVITIES	• Award Subcontract(s) as needed • Prepare Work Plans for various stages of work • Perform RA (as needed) • Implement the RAWP per the project schedule • Conduct environmental release / verification sampling per the approved SAP • Prepare DQA and Closeout Verification Package • Document End Point Criteria completion • Prepare S&M Plan and Final Hazard Classification / Authorization Basis Document for the Long Term S&M phase • "As-Built" drawings as needed • Prepare Decommissioning Project Final Report and NPL Closeout Forms as needed • Prepare DWP for LT S&M • Value Management Reviews/Recommendations			• Implement Long Term S&M Plan
MAJOR DELIVERABLES	• Closeout Verification Package approved by regulators • Documentation of any remaining underground waste sites • Prepare CD-4 Package • End Point Closure Package			• Periodic Reports as required by long Term S&M Plan

Note 1: The process outlined here is for facilities included within a site where the decision has already been made to perform decommissioning under CERCLA.

Project Overview for Disposition Projects (Execution – Transition/Closeout)

Phases	Initiation	Definition	
IT Projects	Need Determination, Strategy Justification & Prioritization	Planning	Requirements Definition
CRITICAL DECISIONS	★ **CD-0 Approve Mission Need Statement**		★ **CD-1 Approve System Requirements and Alternatives**
MAJOR INPUT ITEMS	- Mission Need	- DOE-Approved Task Assignment (CD-0 Approval) - Initial Project Scope	- Project File - Preliminary Project Plan - High-level Project Requirements
MAJOR ACTIVITIES	- Establish Preliminary Project Team - MNS Documented - Identify Schedule and Cost Drivers, Funding Constraints and Other Assumptions - Identify High-level Functions & Requirements - Identify Project Interfaces - Establish Placeholder on OY Budget - MNS included in IT Investment Portfolio - Strategy Selected for Investment - Perform Alternative/Value Management Studies (make-buy, alternate products, alternate designs) - Perform Life cycle Cost Analysis	- Analyze User Environment - Define Project Objectives - Define Project Scope - Develop High-Level Project Requirements - Establish Communications with Functional Areas - Determine Project Feasibility - Develop Project Plan - Develop Software QAP - Conduct In-Stage Assessment - Conduct Exit Stage Assessment	- Develop Software Configuration Management Plan - Document Project Requirements - Develop Project Test Plan - Develop Acceptance Test Plan - Revise and Approve Project Plan - Software Requirements Specification Approved - Conduct In-Stage Assessment - Conduct Exit-Stage Assessment - VM Planning
MAJOR DELIVERABLES	- Strategy for Meeting Mission Need - High-Level Functions & Requirements - Business Decision Range Estimates - Next Phase Budget & Schedule - Initial Project Scope - Initial Cost Benefit - Risk Comparisons/Analysis - Letter to DOE Project Pkg - TPC BDER & Schedule Range - Risk & Opportunity Mgmt. Plan - CD-0 Package	- Project File - Project Objectives, Scope, and Plan - Feasibility Statement - Preliminary Project E-Plan - Software Quality Assurance Plan - Revised BDER & Schedule Range - Revised Risk Reduction/Analysis	- Software Configuration Management Plan - Continuity of Operations Statement/Plan - Software Requirements Specification - Final BDER & Schedule Range - Revised Budget & Schedule - Revised Risk Reduction/ Analysis - Verif. of Mission Need - Project Test Plan - Acceptance Test Plan (draft) - CD-1 Package

Project Overview for IT Projects (Initiation – Definition)

*Some activities in these phases are NOT capital funded (Key Activities have an asterisk on the chart).
Data conversion, development of data conversion programs, the purging or cleansing of existing data, reconciliation or balancing of data, and the creation of new/additional data should all be expense funded.
Development of training, training the acceptance team, training end users, and acceptance testing of the software by the software owner organization should be expense funded.
Complete guidance is provided in FASAB 10 and related guidance.

Phases	Execution				Transition/ Closeout
IT Projects	Functional Design	System Design	Programming	Integration	Installation / Acceptance
CRITICAL DECISIONS	★ **CD-2 Approve APB**	★ **CD-3 Authorization to Complete Implementation**			★ **CD-4 Approve Project Transition Complete**
MAJOR INPUT ITEMS	- Software Req's Specification - CD-1 Approval Letter - Prior Phase Project Plan	- Functional Design Document - APB Phase PEP	- System Design Doc - Prior Phase Project Plan - Project Baseline - CD-3 Approval Ltr.	- Software Baseline - Prior Phase Project Plan	- Software Basel - Documentation Baseline - Prior Phase Project Plan
MAJOR ACTIVITIES	- Determine Software Structure - Design System Inputs and Outputs - Design User Interfaces - Design System Interfaces - Build Logical Model - Build Data Model - Develop Functional Design/ COTS Request for Proposal - Receive Proposal from Vendor - Initiate Procurement of Hardware and Software - Revise Project Plan - Functional Design Document Approved - Conduct In-Stage Assessment - Conduct Exit Stage Assessment	- Create Software Module Specifications - Design Physical Database Structure - Dev Integration Test Plan - Dev System Test Plan - Develop Conversion Plan - Procure COTS Package - Perform COTS FIT/GAP Analysis - Perform COTS Pilot - Develop System Design/ COTS Configuration Doc - System Design Document Approved - Develop Detailed Project Schedules - Develop Project Baselines - Revise Project Plan - Conduct In-Stage Assessment - Conduct Exit Stage Assessment - VM Reviews/ Recommendations	- Develop Installation Plan - Establish Programming Environment - Write Programs/ Configure COTS - Write Data Conversion Programs - Conduct Unit Testing - Develop Plan for Transition to Operational Status - Develop Operating Documentation - Develop Training Program - Revise Project Plan - Conduct In-Stage Assessment - Conduct Exit Stage Assessment - Initiate Change Control System	- Conduct Integration Testing - Conduct System Testing - Initiate Acceptance Process - Train Acceptance Test Team - Revise Project Plan - Module Tests Complete - Integration Tests Complete - Conduct In-Stage Assessment - Conduct Exit Stage Assessment	- Conduct Installation Tests - Install Software in Acceptance - Conduct User Training - Conduct Acceptance Test - Close Acceptance Process - Acceptance Tests Completed - Conduct In-Stage Acceptance - Conduct Exit Stage Assessment - Conduct Operations Training
MAJOR DELIVER-ABLES	- Logical Model - Revised Risk Reduction/ Analysis - Request for Proposal - Vendor Proposal - Revised Budget & Schedule - Revised Project Plan - Data Dictionary - Requirements Traceability Matrix - Functional Design Document - CD-2 Package	- Physical Model - Revised Risk Reduction/Analysis - Design Integration Test Plan (draft) - System Test Plan (draft) - Conversion Plan - System Design Document/COTS Configuration Document - COTS Product - Program Specifications - Project Baselines - Programming Standards - Detailed Project Sched	- Installation Plan (draft) - Integration Test Plan (draft) - System Test Plan (draft) - User Training Mat'rl - Software Baseline (Programmed and/ or COTS config.) - Transition Plan - Operating Documents (draft) - Training Plan (draft)	- Integration Test Reports - System Test Report - Operating Documents (draft) - Training Plan (final) - Installation Plan (final) - Acceptance Test Plan (final) - Pre-acceptance Checklist	- Acceptance Test Report - Acceptance Checklist - Operational System - CD-4 Package

Project Overview for IT Projects (Execution – Transition/Closeout)

Information Technology Investment Guidance is provided via the Clinger-Cohen Act and related DOE Order 200.1. IT Projects are developed in phases guided by DOE Guide 200.1-1.

This chart relates the up-front investment planning and G200.1-1 phases and CDs for a typical construction project. It provides a project management roadmap for IT programs and projects. Definitions and detailed information for IT terms can be found in DOE G200.1-1.

Initiation	Definition
Pre-Acquisition	**Conceptual Design**
Cost: DOE approval if conceptual design costs exceed $600,000 limit **Maturity:** Need estimated conceptual design cost	**Cost:** DOE Authorization **Maturity:** Need project cost and schedule range estimate
Schedule: No schedule requirements to go from Pre- to Conceptual Design	**Schedule:** DOE Approval **Maturity:** Need Preliminary Design schedule
Technical: Support the Conceptual Design Estimate **Maturity:** • Identify Assessments and studies • Issue Design Criteria Orders, regulations, codes & standards) • Identify Functions and Requirements • Identify Technology Development activities • Information Utilization Strategy Mission • Operational Strategy and Automation Strategy • Performance Requirements • Preliminary Vulnerability Assessment Study • Preliminary Site Clearance Permit • Review of Alternatives • Risk Assessment • Site Selection Criteria • Small-Scale testing • Systems Engineering Management Plan—Integrated Runs • Technology development Program Plan a) Program R&D requirements b) Define R&D program phase **Safety and Hazard Analysis / Vulnerability Assessments** • Draft Safeguards Requirements Identification Supported by: –Preliminary VM Study –Hazard Assessment Document –Proposed Process Material Flow • Emergency Preparedness Hazard Survey and screen complete • Hazard Assessment Document (HAD) complete Supported by –Facility Layout –Hazardous material inventory	**Technical:** Support cost & schedule and CDR **Maturity:** • Complete Alternative Studies • Complete CDR • Complete Facility Design Description, approve Facility RD (F&ORs, and draft Program Requirements • Draft System Design Descriptions • Complete conceptual Vulnerability Assessment Study • Develop Key Technical Parameters • Identity system boundaries • Identify engineering development vs. proven process • Identify permitting requirements • Draft ICD • Identify prelim. structures & systems and prelim. safety classifications • Prepare Information Utilization Plan • Prepare Operational/Automation Plan • Preliminary Characterization and Site Selection • Complete Proof of Concept Testing • Prepare Regulatory Management Strategy • Prepare RMP • Complete NEPA (EA, EIS approved) requirements • Complete Proof of Concept Testing • Prepare Regulatory Management Strategy • Prepare RMP • Complete NEPA (EA, EIS approved) requirements **Safety and Hazard Analysis / Vulnerability Assessments** • Preliminary Functional Classification complete Supported by: –Preliminary Hazards Analysis –Selected Alternative Study • Preliminary Shielding Analysis complete Supported by: –Facility Layout –Radiological material location • SRI Rev. 0 complete Supported by: –Conceptual VM study

Project Documentation by Typical Phase (Initiation - Definition)

Execution		Transition/Closeout
Preliminary Design	**Final Design**	**Construction/Startup/ Turnover**
Cost: Congressional funding **Maturity:** Project performance APB (TEC + OPC) including risk adjustments at CD-2	**Cost:** No special requirements to go from final design to construction—under change control **Maturity:** CD-3 approved, CD-4 complete at closeout	**Cost:** No requirements, under change control **Maturity:** Not Applicable
Schedule: Project schedule **Maturity:** Project APB	**Schedule:** No special req'ts to go from final design to construction—under change control **Maturity:** Not Applicable	**Schedule:** No requirements, under change control **Maturity:** Not Applicable
Technical: Engineering and development completed, with risk allowances for open issues **Maturity:** • Complete Accident Analysis • Component requirements identified • Configuration Mgmt. Plan issued • Facility Design Description completed • Final Site Characterization and Site Selection • Initiate Pressure Protection Plan • P&ID Rev. 0 issued • ICDS issued • Prelim layout drawings of major SSCS completed • Performance Verification a) Full-Scale Tests b) Refinement/Optimization—Engr-Scale tests • Material Balance • Reliability, Availability, Maintainability Evaluation complete • System Design Description at system level complete • System boundaries identified • Technology Development activities complete • Updated RMP • Value Management	**Technical:** Complete design documentation **Maturity:** • All detailed design drawings, calculations, specifications, etc. except field urn items complete • Task Plans Issued • ORR Planning and Preparation developed • Finalize Pressure Protection Plan • ORR Planning and Preparation developed • Site Clearance Permit	**Technical:** **Maturity:** • All as-builts complete • Performance Verification a) Operating Parameters Definitions b) Process Optimization • ORR Planning and Preparations complete • Construction Punch List • All test plans issued and testing complete
Safety and Hazard Analysis / Vulnerability Assessments • ALARA Review complete Supported by: –Preliminary design • Automation and info design Approach Finalized • PDSA/PSAR Issued • Preliminary Emergency Plan Complete Supported by: –PDSA/PSAR Rev. A –Preliminary Design –Project Cost Estimate	**Safety and Hazard Analysis / Vulnerability Assessments** • Accident Analysis complete Supported by: –Final Design –Final Functional Classification • Basis for Interim Operation Complete • Critically Analysis complete Supported by: –Final Design –Draft Vulnerability Assessment Report –Final Functional Classification –Administrative Controls –Final Hazards Analysis –Accident Analysis –Criticality Analysis • Final Shielding Analysis complete Supported by: –Final Design • Fire Hazards Analysis Complete Supported by: –Final Design –Final Functional Classification • Preliminary technical safety req'ts identified • PDSA/PSAR Report complete Supported by: –Emergency Action Levels	**Safety and Hazard Analysis/ Vulnerability Assessments** • Emergency Preparedness Hazard Assessment • Final Fire Hazard Analysis complete Supported by: –Final Drawings –Walk-down –Tests • DSA/FSAR Issued Supported by: –As-builts –Final Hazards Assessment –Startup test results –Site Safeguards and Security Plan –Safeguards and Security Management Report –Final Vulnerability Assessment Report –Tests (force on force) • Technical Safety Requirements complete Supported by: –DSA/FSAR

Project Documentation by Typical Phase (Execution – Transition/Closeout)